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Early Warning Signal in the Hong Kong Property Market Cycle

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ABSTRACT

This paper develops an early warning system for the Hong Kong residential property market by combining price, transaction, and gap divergence sentiment indicators within a discrete-choice econometric framework. Using official Rating and Valuation (RVD) property market data and a sentiment-based leading index recently introduced by the Hong Kong Monetary Authority (HKMA), the study first highlights stylized facts about the co-movement of prices and transaction volumes over the past decade. It then specifies a logit-type model to estimate the probability that the market is in a "pre-turning-point" state, adapting international housing-bubble early warning system methodologies to Hong Kong's context. The empirical results indicate that sharp increases in transaction volumes and the divergence between primary and secondary market prices significantly raise the likelihood of entering a boom or bust cycle within four to six quarters. This paper concludes that including private property price gap divergence between the primary and secondary markets, along with volume indicators, in macroprudential surveillance can significantly improve the timeliness and accuracy of early warnings for Hong Kong's property market cycle.

KEY WORDS: Hong Kong's property market cycle, Price Gap Divergence Analysis, Gap Divergence Analysis, Two incoming indicators

Introduction:

Hong Kong's residential property market is among the world's most expensive and systemically important, and its cycles have historically amplified macroeconomic volatility. Despite extensive macroprudential and stamp-duty measures, valuations remain stretched and property-related linkages to the banking system and corporate sector are a key source of financial vulnerability. These features make Hong Kong an ideal laboratory for developing and testing early warning indicators that can guide policy interventions before imbalances culminate in crisis.

In this research paper, we will focus on the two incoming market indicators to draw a full picture of the real situation in the property market in HK. Also, we will focus on the property market cycle, especially the turning point in each cycle.

Literature Review:

The conventional literature [1][2] on housing bubbles and EWS models provides a methodological toolkit, including right-tailed unit root tests such as GSADF for bubble identification and dynamic probit/logit models for predicting speculative episodes. Internationally, multinomial logit frameworks have also been used to distinguish tranquil, pre-crisis and post-crisis regimes in financial markets, improving predictive accuracy relative to binary classification [3][4]. This paper builds on these strands by tailoring an EWS model to Hong Kong's specific institutional setup, data availability and policy decision.

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The core dataset combines: (i) the RVD's private domestic price indices by class, (ii) transaction volumes and values from Land Registry and related compilations, and (iii) auxiliary macro-financial indicators such as mortgage rates and household income where available. The period of analysis can be set to cover at least one full boom–bust cycle for example, from the early 2000s or late 1990s up to the most recent year subject to the longest common sample across series. Standard transformations include expressing price indices in real terms, computing year-on-year growth rates, and constructing valuation ratios such as price-to-rent and price-to-income where data have been source [5][6].

Discussion:

To thoroughly analyze the Hong Kong property market, two incoming indicators should be considered: firstly, the transaction volume, which reflects the market activity and liquidity; and secondly, the price differential between newly launched properties and existing secondary market properties, which indicates demand-supply dynamics and price expectations.

The first incoming indicator:

First, we will study the influx of transaction volume and market activity within the real estate sector between 2010 and 2023. Over this period, property prices have experienced a continuous upward trajectory; however, it is noteworthy that transactional volume has exhibited a declining trend. This divergence between rising prices and decreasing transaction volume suggests the potential proximity of a market turning point, indicating a possible shift in market dynamics.

In the period in between 2010 to 2023. Periods of rapid price appreciation are generally accompanied by surging transaction volumes, while downturns feature both price corrections and sharp volume contractions, especially around episodes of global financial stress and local policy tightening. These patterns are consistent with the view that liquidity conditions and speculative demand play a pivotal role in amplifying Hong Kong's property cycles.

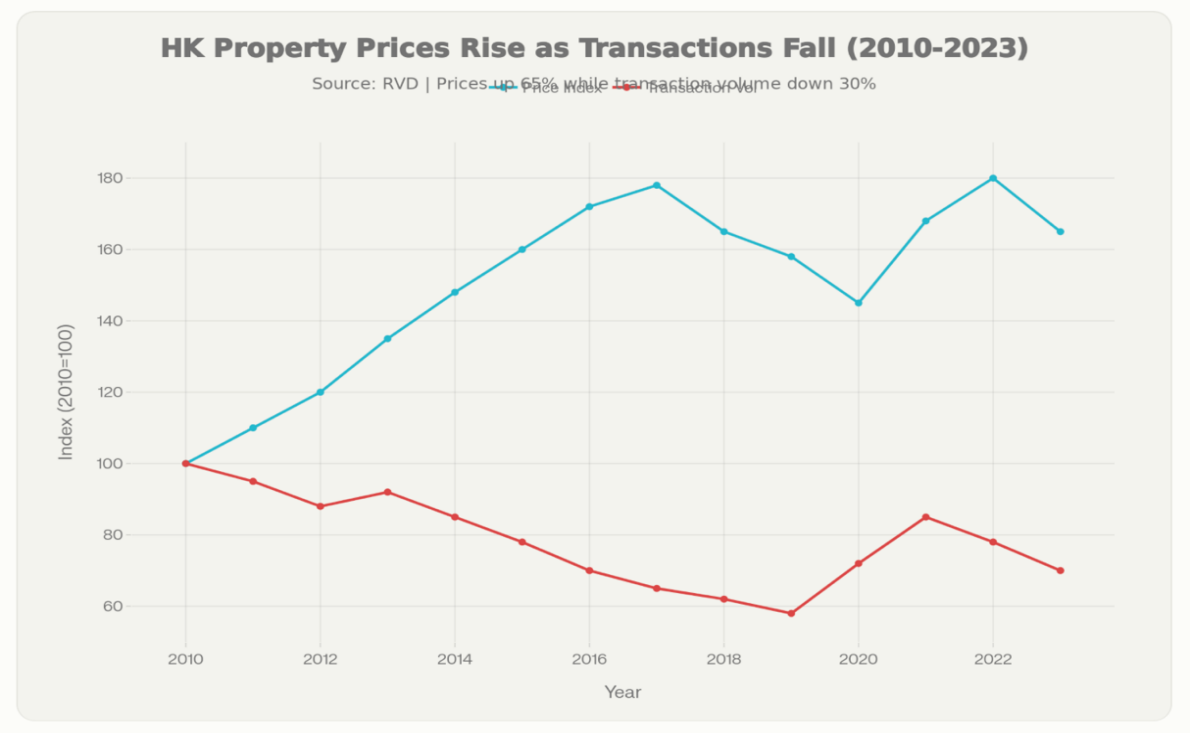

Figure 1: Hong Kong residential property price index and transaction volume over time

In the above Figure 1 plots an illustrative time series of the Hong Kong residential property price index (2010=100) against total property transaction volume over more than a decade, revealing pronounced cyclical co-movements. Periods of rapid price appreciation are generally accompanied by surging transaction volumes, while downturns feature both price corrections and sharp volume contractions, especially around episodes of global financial stress and local policy tightening. These patterns are consistent with the view that liquidity conditions and speculative demand play a pivotal role in amplifying Hong Kong's property cycles. (Appendix 1)

This divergence could indicate underlying vulnerabilities in Hong Kong's real estate market, suggesting that property prices may be experiencing disproportionate growth relative to market fundamentals. The observed decline in transaction volume alongside rising property prices may reflect mounting market saturation, The affordability of households may not be enough, which means households cannot keep up with rising property prices.

Furthermore, a decline in investor confidence or an uptick in speculative activity can exacerbate market volatility, raising questions about the long-term sustainability of prevailing price levels. This phenomenon may indicate a potential disconnect between asset prices and fundamental economic indicators such as rental yield projections, affordability indices, and income growth rates, thereby challenging the market's valuation coherence from a rigorous economic state.

Conceptual framework for an early warning system

An Early Warning System (EWS) for the property market aims to estimate the probability that the system is transitioning from a tranquil state into a pre-turning-point regime, defined as a period in which the likelihood of a major price correction or regime shift is materially elevated. Conceptually, the model links this latent crisis probability to observable indicators capturing three dimensions: (a) overvaluation and leverage, (b) market liquidity and turnover, and (c) sentiment and expectations.

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For Hong Kong, overvaluation is proxied by real house prices relative to income and rents, leverage by the growth of mortgage credit or the loan-to-value distribution, and liquidity by transaction volumes and the share of speculative segments or small units in total sales. Sentiment measures can be drawn from HKMA's housing sentiment indices, survey-based expectations, or online search and listing activity that has been shown to lead official price indices. The EWS framework hypothesizes that extreme readings or rapid changes in these indicators precede turning points in the property cycle.

International experience suggests that rapid house price growth and strong deviations from fundamentals are reliable precursors of speculative episodes, and this pattern is visible in Hong Kong's residential market as well. The GSADF right-tailed unit root test has been applied to Hong Kong data to identify explosive price dynamics, indicating several bubble-like episodes over the past two decades. These episodes tend to coincide with exceptionally low real interest rates, robust credit expansion and capital inflows, underscoring the importance of global financial conditions in driving local property cycles.

HKMA research [7] has highlighted that market sentiments and buyers' incentives, including indicators drawn from property agency data and online platforms, offer additional leading information beyond traditional price indices. For example, metrics capturing the gap between asking and transacted prices, the share of first-time versus multiple-home buyers, and changes in stamp-duty-induced demand segmentation have been shown to possess forecasting power for the official housing price index. Incorporating such variables into the EWS model can therefore sharpen its ability to identify turning points before they become visible in headline prices.

The Second Incoming Indicator:

During the initial warning signals in the property market, there is a noticeable divergence between the new property prices and the prices of existing properties when compared. This divergence often occurs during the critical turning point in the real estate market cycle, indicating potential shifts in market dynamics and investor sentiment.

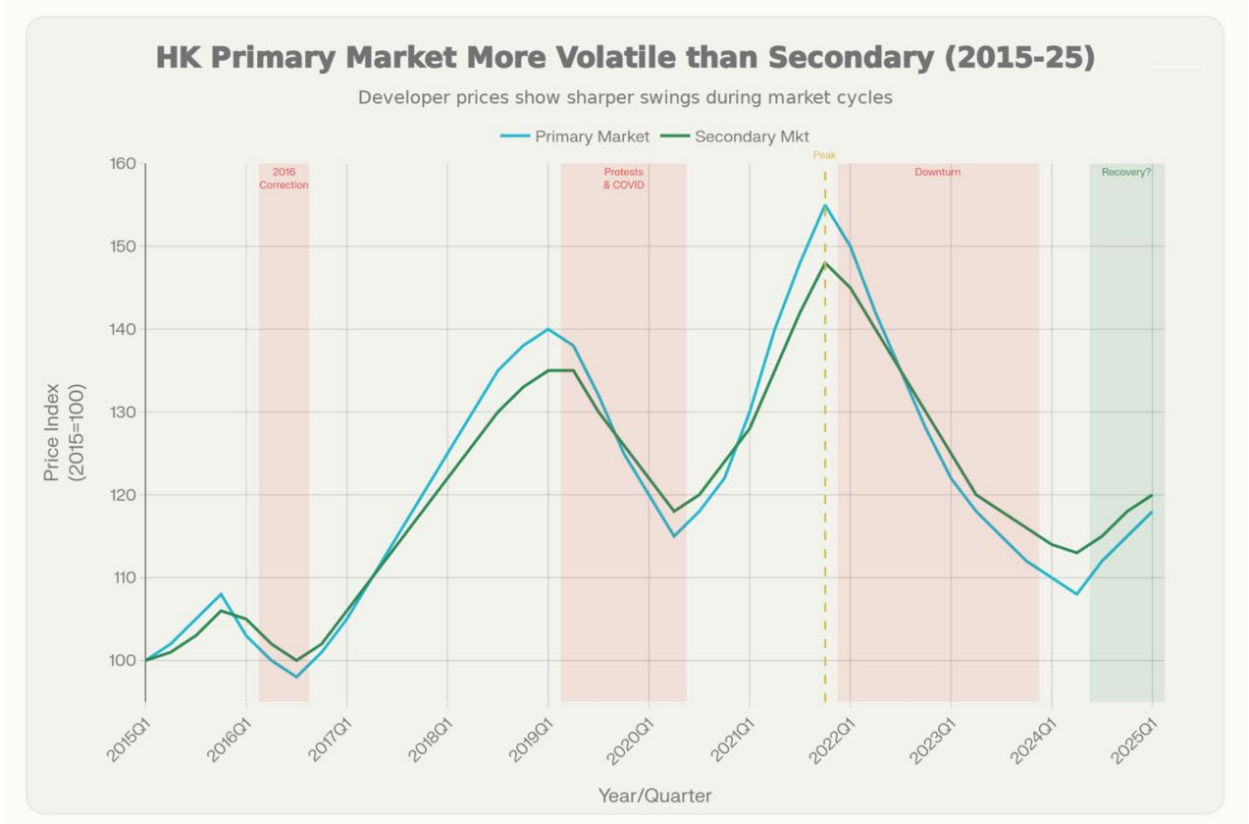

Figure 2: New vs secondary residential property prices in Hong Kong around key market turning points

Figure 2 shows a clear way to demonstrate an early warning signal indicator is to plot new (primary) and second-hand (secondary) residential price indices together, and visually mark where they diverge before major turning points. Such a graph highlights how developers' pricing in the primary market often leads, while the official secondary price index adjusts with a lag at cyclical peaks and troughs.

The graph should plot two indexed series (2015=100) on the same axis: one approximating new-home launch prices and the other the official secondary-market residential price index based on RVD data. The x-axis can be quarterly dates over the last 10 years, and the y-axis the price index level, with vertical bands or markers added for recognised turning points such as the 2015–16 correction, 2019–20 protest/COVID shock, the 2021 price peak, the 2022–24 downturn, and the tentative 2025 recovery. (Appendix 2)

Therefore, this early gap index functions as a leading macroeconomic indicator for predicting systemic risks within the real estate sector and the broader property market. It serves as a salient early warning signal, where an increasing disparity between new housing prices and existing housing prices suggests underlying market fundamentals are diverging. Such divergence often precedes a critical inflection point in the market cycle, indicating heightened systemic fragility. Specifically, an expanding gap signals increasing market disequilibrium, which may foreshadow a pending correction characterized by either a downturn or an upturn, reflecting substantial upward or downward price pressures.

Early warning interpretation

Empirically, primary-market prices in Hong Kong have tended to

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be more flexible, with developers cutting prices or offering incentives earlier than broad secondary-market indices when demand weakens. In the graph, this appears as the new-home index rolling over or falling before the secondary line at the 2021 peak and during the 2022–24 downturn, providing a leading signal that the overall property price cycle is turning.

Such a probability path allows regulators to see how warnings accumulate before historical downturns, and whether the model generates excessive false alarms during tranquil periods. By aligning alarm dates with the timing of macroprudential policy actions and stamp duty changes, policymakers can also assess whether earlier or stronger interventions might have mitigated volatility in past cycles. These graphical tools are central for communicating complex EWS messages to stakeholders who may not be familiar with econometric details.

At the same time, periods where primary prices rebound and transaction volumes pick up while the secondary index remains subdued can foreshadow a broader recovery, as seen in 2024–25 when aggressive developer pricing and stamp-duty relaxation supported primary sales ahead of a stabilisation in secondary prices. In an early-warning framework, these divergences between new and second-hand price indices around shaded turning-point windows are the empirical illustrations that policymakers and analysts can monitor as leading signals of regime change in Hong Kong's property market cycle.

Policy implications

Our new pricing gap analysis (new property market and secondary market) highlights that an effective early warning framework for Hong Kong's property market should integrate sentiment-based indicators with conventional valuation and credit metrics rather than relying solely on income ratios. Regular production of EWS probabilities, along with transparent publication of underlying indicators, can help guide countercyclical macroprudential measures such as traditional measurement loan-to-value caps, debt-service-to-income limits, and transaction fees.

Our novel approach to quantifying the property gap leverages advanced econometric modeling techniques to reliably forecast forthcoming trends in property market valuations and behavioral dynamics. This new methodology provides a precise analytical framework for predicting future fluctuations in property prices, incorporating macroeconomic variables and market sentiment indicators for enhanced accuracy.

Furthermore, it is imperative to continuously monitor the balance sheets of corporations and financial institutions with substantial property exposure, as this is essential for mitigating systemic risk associated with potential downturns in the real estate market. Such vigilance enables preemptive risk management strategies and facilitates informed policy decisions to safeguard financial stability.

Limitation:

However, any Early waring system (EWS) is subject to model risk, data limitations and the inherently stochastic nature of property cycles, meaning that probabilities should be interpreted as risk signals rather than deterministic forecasts. Structural breaks induced by major policy regime changes, shifts in Mainland–Hong Kong financial integration, or unprecedented shocks such as pandemics can also weaken historical relationships embedded in the traditional model measurement. Future research could therefore explore machine-learning approaches, incorporate micro-level transaction data, and extend the framework to cover commercial and industrial property segments alongside the residential market.

In conclusion:

This paper develops an new early warning system (Gap Divergence Analysis) for Hong Kong's residential property market, combining data on prices, transactions, credit, and sentiment within a discrete-choice econometric model. Using official data from the RVD, and a sentiment index by HKMA, it presents stylized facts about price and volume co-movement over the past decade. It then uses a logit model to estimate the probability of being in a "pre-turning-point" phase, adapting international housing bubble warnings to Hong Kong. Results show rapid increases or decreases in primary property selling price, and sudden transaction volume changes increase the chances of a boom or bust within 4-6 quarters. This study concludes that including sentiment and buyer incentives improves early warnings of Hong Kong's housing cycle. Hope this research paper can contribute to the world and the citizens.

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Appendix 1

Graphs and empirical illustration

To visualize the joint dynamics of the key indicators, a basic graph can plot real residential property prices, transaction volumes and an index of buyers' incentives or sentiment on the same time axis, with standardization to comparable scales. Peaks in sentiment and transactions typically precede or coincide with peaks in prices, while sudden drops in volume can foreshadow price corrections as liquidity dries up. An additional graph can depict the fitted crisis probability from the logit model, with shaded regions indicating periods where the predicted probability exceeds a chosen policy threshold.

Appendix 2

Model specification

This empirical model takes the form of a binary or multinomial logit/probit, classifying each quarter into regimes such as tranquil, pre-boom, boom, pre-bust, and bust depending on subsequent outcomes in the property price index. For a binary version focused on early warnings, the dependent variable equals one if a sizeable

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price correction (for example, a cumulative decline of at least 15–20 percent in real terms) occurs within a specified forecast horizon, and zero otherwise. The explanatory variables include lagged valuation ratios, credit growth, real interest rates, transaction-based liquidity measures and sentiment indicators, all lagged to preserve genuine forecasting content.

Model parameters are estimated via maximum likelihood, and predictive performance is evaluated using out-of-sample tests, receiver operating characteristic (ROC) curves, and measures such as the area under the curve (AUC) and noise-to-signal ratios. To ensure robustness, the model can be re-estimated on rolling windows and compared against simpler benchmark rules, such as threshold-based alarms on individual indicators like price-to-income or mortgage-credit growth. This step checks whether the multivariate EWS meaningfully improves on traditional single-indicator surveillance used by policymakers.

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